We would reiterate our conviction that a sound and thorough literary training can be given through English, German, and French without a knowledge of Latin. If, in the words of the memorandum, English can serve as "the backbone of a humanistic education," surely a combination of English, German, and French would constitute a valuable type of humanistic education.

We greatly regret that the Board has not, as yet, seen its way to lead public opinion on so vital a matter as the study of modern languages, and we express a hope that the memorandum is not its last word.

NOTES.

The following is a list of those to whom the Royal Society has this year awarded medals. The awards of the Royal medals have received the King's gracious approval:—the Copley medal to Dr. G. W. Hill, For.Mem.R.S., for his researches in mathematical astronomy; a Royal medal to Prof. A. E. H. Love, F.R.S., for his researches in the theory of elasticity and cognate subjects; a Royal medal to Major Ronald Ross, F.R.S., for his researches in connection with malaria; the Davy medal to Sir James Dewar, F.R.S., for his researches at low temperatures; and the Hughes medal to Dr. R. T. Glazebrook, F.R.S., for his researches on electrical standards.

We regret to see the announcement of the death, on November 12, of Dr. W. J. Russell, F.R.S., in his eightieth year.

The death is announced, at sixty-six years of age, of Sir William Thomson, C.B., honorary surgeon to the King in Ireland, and the author of several publications on surgical subjects.

Sir T. H. Holland, K.C.I.E., F.R.S., professor of geology and mineralogy in the Manchester University, will deliver the Wilde lecture of the Manchester Literary and Philosophical Society for 1910.

The death is announced, on November 13, of Dr. C. Graham, formerly professor of chemical technology at University College, London, at seventy-four years of age. Dr. Graham was a vice-president of the Institute of Chemistry in the years 1882–4, and served on the council for several years.

The specimens illustrating the manufacture of high-class lenses, shown by Messrs. J. H. Dallmeyer, Ltd., at the Franco-British Exhibition last year and the Imperial International Exhibition this year, have been presented to the Board of Education. This collection, which was awarded a Grand Prix, is now housed in the western galleries of the Science Museum, South Kensington.

At the annual general meeting of the Cambridge Philosophical Society on October 25, the following were elected officers of the society for the ensuing session, 1909–10:—*President,* Prof. Bateson; *vice-presidents,* Dr. Hobson, Dr. Fenton, Prof. Seward; *treasurer,* Prof. Newall; *secretaries,* Mr. A. E. Shipley, Dr. Barnes, Mr. A. Wood; *new members of the council,* Sir J. Larmor, Prof. Biffen, Prof. Pope, Mr. R. H. Rastall, and Mr. K. Lucas.

At the annual general meeting of the London Mathematical Society on November 11 the following were elected as the council and officers for the session 1909–10:—*President,* Sir William Niven, K.C.B., F.R.S.; *vice-presidents,* Mr. A. Berry, Dr. W. Burnside, F.R.S., Major P. A. MacMahon, F.R.S.; *treasurer,* Sir Joseph Larmor, F.R.S.; *secretaries,* Dr. A. E. H. Love, F.R.S., Mr. J. H. Grace, F.R.S.; *other members of the council* (names of members not on the retiring council are in italics), Dr. H. F. Baker, F.R.S., Mr. G. T. Bennett, *Dr. T. J. I'A. Bromwich, F.R.S., Mr. E. Cunningham,* Mr. A. L. Dixon, Dr. L. N. G. Filon, Dr. E. W. Hobson, F.R.S., Mr. H. W. Richmond, and Mr. A. E. Western.

Sir Ernest Shackleton was officially received by the Paris Geographical Society on Monday, November 15, in the Grand Amphitheatre of the Sorbonne, and gave an account of his Antarctic expedition. From the *Times* we learn that after the address Prince Roland Bonaparte, the president of the society, rose and said:—"Since its foundation in 1827 our Geographical Society, which is the *doyenne* of all similar societies, has always desired to recognise the labours of the most illustrious travellers by bestowing upon them its grand gold medal. Among those to whom it has been given were the Polar explorers Sir John Franklin, Sir James Clark, Ross, Dumont d'Urville, and Nansen. To the list of these great names the Geographical Society is happy to add yours by offering you its grand gold medal, which is the highest recompense that is in its power to bestow."

The first session of the seventeenth International Congress of Americanists will be held in Buenos Ayres, Argentine Republic, on May 16–21, 1910. The general and sectional meetings will be held in the hall of the National University in Buenos Ayres. A second session will take place in Mexico in September of the same year. A commission of organisation has been formed, the president of which is Dr. José Nicolas Matienzo, dean of the faculty of philosophy and letters in the National University. Communications, which may be either oral or written, may be made in English, French, German, Italian, Portuguese, or Spanish. The conference will deal with questions relating to the ethnology, archæology, and history of the New World, and a detailed programme will be published towards the end of the present year. For further information application should be made to the general secretary of the committee of organisation, Dr. Lehmann-Nitsche, Calle Viamonte 430, Buenos Ayres.

The annual report of the Liverpool Marine Biology Committee and the Port Erin Biological Station was submitted by Prof. Herdman at a meeting of the Liverpool Biological Society on November 12. In the course of his address Prof. Herdman gave an account of the work, both scientific and economic, carried out during the past year, such as the curator's report upon the hatching and setting free of more than seven millions of young plaice, making a total of 25½ millions during the six years the hatching has been in operation; the experiments in lobster rearing; Dr. Ward's investigations on the eggs and young larvæ of the plaice (illustrated by many very beautiful enlarged photographs); Mr. Gravely's work on the development of the brittle-starfish; Dr. Herbert Roaf's researches on digestion in marine animals; Mr. Dakin's physico-chemical observations on the condition of the sea-water at different times in connection with the migrations of the food of fishes; Mr. Edwin Thompson's photomicrographs of various types of minute organisms in the sea; and Prof. Herdman's own investigations into the detailed distribution of life in the sea. Some of the biological stations and establishments for fish culture in Canada and the United States were also described, and attention was directed to the American system of providing dormitories and dining halls for the students and researchers, and to the manner in which men of wealth in the States advance science by making large donations to such laboratories in order to defray the expenses of special investigations or marine and other explorations.

Dr. D. S. Jordan, president of Stanford University, contributes to *Science* an appreciation of the work of Dr. Kakichi Mitsukuri, dean of the college of science in the Imperial University of Tokio, who died on September 16. Dr. Mitsukuri was the author of numerous papers on zoological subjects, and was largely responsible for the establishment of the seaside laboratory at Misaki, where much excellent work has been done by Japanese, as well as by American and European naturalists. Dr. Mitsukuri was born in Edo, Japan, on December 1, 1857. He went to America in 1873, and received the degree of Ph.D. in zoology from Yale University in 1879. Returning to Japan, he was appointed a professor of zoology, in 1882, in the science department of the University of Tokio. In 1883 he received the degree of Ph.D. in zoology from Johns Hopkins University. In 1893 he was appointed councillor of the Imperial University. In 1896 he was made head of a commission for the investigation of the fur seal, and in 1897 he signed on behalf of Japan a treaty whereby Japan agreed for a certain length of time to consent to any adjustment of this matter which might be made by Great Britain and the United States. Dr. Mitsukuri was made dean of the College of Science of the Imperial University of Tokio in 1901, and six years later was awarded the Order of the Sacred Treasure in recognition of his public services. Of late years Dr. Mitsukuri was engaged in the special study of the turtles, and was also largely occupied with matters of administration.

Twenty-four delegates, representing Great Britain, France, Germany, Austria-Hungary, Russia, Spain, United States, Canada, and Australia, met at the Foreign Office on Tuesday to consider the steps to be taken for constructing a map of the world on the scale of 1 : 1,000,000 (16 miles to the inch), on a uniform system. The conference was opened by Sir Charles Hardinge, Permanent Under-Secretary of State for Foreign Affairs. In opening the congress Sir Charles Hardinge summarised the history of the movement. The *Times* reports him to have said that it was in the year 1891 that the question of an international map was first raised at the International Geographical Congress at Berne. Two years later several distinguished German men of science met at Stuttgart, where the question was again seriously discussed, and upon that occasion Prof. Brudener contributed a very valuable report upon the subject. Two years later the matter was taken up by several geographical societies both in Paris and London, and it was fully discussed at a meeting of the Geographical Congress in London in 1895. In various countries the preparation of maps on the scale of 1 : 1,000,000 was then commenced. These maps were chiefly of Asia and Africa, and though uniform in size, sheets, and scale, were wanting in uniformity in other details. The next step of any importance took place in 1908, when it was proposed by the delegates of the United States of America, at the International Geographical Congress at Geneva, that an international map should be definitely standardised. This was agreed to by the members of the congress, and a system of detailed resolutions was universally voted by them. It was felt, however, that unofficial proceedings of this description had no positive result, and were somewhat of the nature of pious aspirations. It was considered necessary, therefore, that the Governments interested should invite official delegates to meet in conference and to arrive at an agreement, which they would be able to submit to their respective Governments for approval and adoption.

The greater portion of the combined first to fifth parts of vol. xviii. of *Actes de la Société scientifique du Chili* is devoted to an article, by Mr. C. E. Porter, on myriopods, which concludes with a classified list of the known Chilian species.

In order to obtain sufficient material for an inquiry as to the degree of variation in the wings of beetles of the family Carabidæ, Dr. Sharp asks in the November number of the *Entomologist's Monthly Magazine* for fresh and unmounted specimens of these insects. The inquiry, it is stated promises to yield results of considerable interest.

Among other articles included in the August number of the Annals of the Transvaal Museum, attention may be directed to a check-list of the butterflies of the Transvaal, with notes on certain species, by Mr. C. J. Swiestra. The author has been enabled to raise the number of known species from the 238 or 239 (for both these numbers are mentioned), recorded by Mr. W. L. Distant in 1898, to 316.

In the October number of the *Museums Journal* Mr. H. Bolton directs attention to a representative series of insects recently installed in the Bristol Museum with the object of displaying the essential features and character of the different orders and their mutual relations, while in a second article the same author emphasises the value and importance attaching to exhibits of injurious insects.

We have to acknowledge the receipt of the *Scientific Monthly* for October, containing abbreviated reports of some of the presidential addresses at the Winnipeg meeting of the British Association; also of part i. of a catalogue of books on natural history offered for sale by Mr. Quaritch, of Grafton Street. This part includes scientific voyages and the publications of learned societies.

Considerable interest attaches to the account, by Mr. C W. Gilmore, of a new generic type (*Opisthias rarus*) of rhynchocephalian reptile from the Jurassic of Wyoming, published as No. 1698 (vol. xxxvii., pp. 35–42) of the Proceedings of the U.S. National Museum. The genus is established on the evidence of a left dentary bone of the lower jaw, which appears to approximate to the corresponding element in the existing Sphenodon and the Kimeridgian Homœosaurus. Opisthias is the first terrestrial rhynchocephalian hitherto obtained from American strata.

We have received a copy of the report on the scientific investigations of the Northumberland Sea-fisheries Committee for 1908–9, from which it appears that additional trawlings have been conducted in order to standardise the previous results. A number of marked fish—notably a turbot, after four years—were recovered, while, out of 100 lobsters marked in 1907, thirty-six, none of which had migrated from their native grounds, were re-taken within nine months. An account of the marine laboratory opened at Cullercoats in 1908 is appended. The committee strongly recommends the establishment of a close time for crabs from October to January, during which period many of these crustaceans are changing their shells and out of condition.

To Mr. W. B. Helland-Hansen, the author, we are indebted for a copy of a report on a recent statistical research into the biology of the cod and the haddock in the North Sea, published in vol. x. of "Rapports et Procès-verbaux du Conseil international pour l'Exploration de la Mer," 1909. The report is based on trawlings carried out to a great extent for the purpose of ascertaining the individual dimensions and weights of the haddock and cod frequenting the fishing-grounds at different seasons and in different years, in order to determine whether the grounds are being over-fished. The investigations are, however, only in a preliminary stage, and before they can be regarded as anything like complete will have to be extended so as to embrace surface-fishing at seasons when the cod are in pursuit of the shoals of herrings.

OUR knowledge of Peruvian barnacles has been but slightly increased since the appearance of Darwin's monograph, and considerable interest attaches, therefore, to the report, by Dr. A. Pilsbry, published as No. 1700 of the Proceedings of the U.S. National Museum, on a collection recently made by Dr. R. E. Coker and Dr. W. H. Jones, of the U.S. Navy. The apparent absence of parasitic species or of forms commensural on crabs is a remarkable feature of the cirripede fauna of Peru. A new species of Balanus is described, and the opportunity has been taken to publish figures sufficiently large to exhibit the details of the plates of the previously known Peruvian forms.

IN Bulletin No. 67 of the U.S. National Museum, comprising 135 pages of text and a large number of illustrations, Mr. Nathan Banks supplies entomologists with very full and detailed directions for collecting and preserving insects according to modern methods. A bulletin on the same subject, prepared under the direction of the late Dr. C. V. Riley, was published in 1892, but since that date new methods of collecting have been devised and studies are conducted on entirely new lines, so that it has been deemed advisable to re-write the pamphlet from beginning to end. Many notes on the preparation of insects for the cabinet have been copied from various entomological journals, while special information has been supplied in regard to particular groups by members of the Bureau of Entomology. The work commences with a general review of the different orders of insects and their developmental history, after which come directions for capture and preservation in the field and mounting and storing in the museum. Figures of apparatus of all kinds are given, accompanied by full descriptions of the cabinets employed in the U.S. Museum. The scope of the work likewise includes directions for rearing live insects and maintaining them in captivity, while the collection and preservation of spiders, scorpions, and centipedes also come within its purview.

A REPORT by Dr. Newsholme and Sir Malcolm Morris, K.C.V.O., the British delegates to the International Conference on Leprosy held at Bergen in August last, has been issued as a Parliamentary Paper (Cd. 4916). They, together with several delegates from British colonies, formulated several resolutions for the control of the disease, the chief of which are as follows:—(1) Leprosy is spread by direct and indirect contagion from persons suffering from the disease. The possibility that indirect contagion may be effected by fleas, bugs, lice, the itch parasite, &c., has to be borne in mind. (2) Leprosy is not due to the eating of any particular food, such as fish. (3) There is no evidence that leprosy is hereditary. (4) In leprosy an interval of years may elapse between infection and the first recognised appearance of disease. (5) The danger of infection from leprous persons is greater when there is discharge from mucous membranes or from ulcerated surfaces. (6) Compulsory notification of every case of leprosy should be enforced. (7) The most important administrative measure is to separate the leprous from the non-leprous by segregation in settlements or asylums. (8) In settlements home life may be permitted under regulation by the responsible authorities.

A SELECTION of new or noteworthy Philippine plants described by Mr. Merrill, forming the seventh series, is published in the *Philippine Journal of Science* (August). The majority of the determinations refer to tree specimens, and include new species of Diospyros and Cryptocarya, also additions to the families Meliaceæ and Flacourtiaceæ. In the latter family the author finds a similarity between Philippine and Ceylonese species. A new genus, Embolanthera, allied to Maingaya, is created in the Hamamelidaceæ, and Everettiodendron in the Euphorbiaceæ. A noteworthy new species is *Chonemorpha elastica*, an asclepiad, which promises to be the best native rubber-producing vine.

WITH the view of making the best use of their local museums, the Essex Museum of Natural History, Stratford, and the Epping Forest Museum, Chingford, the Essex Field Club held during the previous winter two conferences to discuss the use of museums for promoting nature-study in schools, which are reported in a small pamphlet recently published. At Stratford educational facilities are provided in the form of mounted specimens, drawings, and explanatory labels, while at Chingford the exhibition of seasonal plants and branches is made a special feature. Nevertheless, it was agreed that a museum is not the place to hold nature-study classes for children, although well adapted for classes of teachers. Prof. R. Meldola, in testifying to the value of nature-study, expressed the opinion that it should be regarded as a method of training, not as a subject for teaching, and that it should include the study of the inorganic world; he also emphasised the necessity for nature-taught teachers.

THE dispersal of plants was a subject to which the late Prof. Errera devoted much attention, and among the problems which came under his notice was the manner in which plants manage to reach rocks isolated by glaciers. In this connection he visited the isolated peaks, Aguagliouls, by the side of the Roseg glacier, and Isla Persa, flanked by the Morteratsch glacier. A posthumous paper published in the *Recueil de l'Institut botanique Léo Errera* (vol. viii.) contains a list of the plants collected on these rocks and on the moraine adjoining the former. There is a remarkable contrast between the species growing on the peak Aguagliouls and the moraine; on the moraine three species of Trifolium and *Anthyllis vulneraria* were taken, and Primulas were wanting, while on the peak the Leguminosæ were represented by one Trifolium, but six species of Primula were collected.

THE vigorous efforts made by the American agricultural colleges to get into touch with the practical man are well exemplified by the large numbers of bulletins they issue dealing with every phase of agriculture and every problem about which it is supposed the farmer requires help. We have received a series of bulletins from the Colorado Agricultural College which are quite typical of their kind; the subjects dealt with are the cultivation of fruit trees, pig production, and the manufacture of gate-posts out of cement. The bulletins are drawn up by experts, are clearly written, and well illustrated. The cost of production and distribution must be considerable.

THE United States Department of Agriculture has recently issued a popular bulletin by Mr. Milner on the use of milk as food. It is stated that about one-sixth of the total food of the average American family is furnished by milk and its products. A simple account is given of its properties and of the effects of bacteria; a number of milk products are described, and comparison is instituted between these and other nutrients. It is further shown that milk is quite as economical as other animal foods, but dearer than most vegetable products; as a source of protein it is especially economical.

WE have received from the Michigan State Agricultural College Experiment Station a bulletin describing a local cattle disease known as the Grand Traverse or Lake Shore disease. At the outset the head is carried low with drooping ears, the coat stares, and the appetite falls off. The animals drink less and less as the disease advances, until finally they refuse to drink at all. As the appetite fails it becomes depraved, and such materials as bones, wood, leather, rope, or bark are eaten. The animals become extremely emaciated. The seat of the disease appears to be in the third stomach, where extensive lesions are often found. The cause of the disease is obscure, but some evidence was obtained that showed it lay in the methods of feeding. Experiments to test this view are in progress.

AMONG some miscellaneous publications to hand from the United States Department of Agriculture is one on the method of winter fumigation for the white fly infesting citrus trees. The tree is covered with a sufficiently large tent in which hydrocyanic acid is being generated; by careful attention to certain details the fly can, it is said, be exterminated at a small cost. A Farmers' Bulletin gives a short summary of the results obtained at some of the agricultural experiment stations. No fewer than ten different subjects are dealt with, and references are given to the original sources, from which farmers who wish to do so can readily obtain fuller information. Another bulletin describes the card-index sets now being made up and sold, in which are catalogued the publications of the Departments of Agriculture, the Geological Survey, and the State Surveys. Such an index is indispensable in the United States, where an enormous number of official publications are issued every year.

THE *Geographical Journal* for November contains a short report, by Sir Ernest Shackleton, on some results of the British Antarctic Expedition of 1907–9. The paper gives a summary of the routes of the chief expeditions from the headquarters at Cape Royds, and a brief narrative of the most important events which occurred during each. It is announced that most of the volumes containing the scientific records and results of the expedition will probably be issued within the next twelve or eighteen months. The contribution is accompanied by three maps.

DR. WARREN DU PRÉ SMITH, chief of the Division of Mines, Bureau of Science, Manila, contributes a paper to the November number of the *Geographical Journal* on geographical work in the Philippines. The work under the American *régime* is carried on primarily by the United States Coast and Geodetic Survey, which is responsible for the most accurate surveys, but mapping is also done by the United States Army, the Bureau of Constabulary, the Bureau of Lands (cadastral surveys), and the Division of Mines. The land area of the Philippines is approximately 115,000 square miles, and of this about 14,000 square miles had been covered by triangulation, and the topography of 1500 square miles mapped up to June 30, 1908.

THE *Revue des Idées* for October contains an article, by Prof. Jacques Loeb, of California, entitled "Les Tropismes et la Psychologie." The writer refuses to accept the common view that a physical interpretation, however complete, of a psychical phenomenon can never afford an explanation of its psychical character. He maintains that the "will" of an animal is merely a term useful to cloak our ignorance of the forces determining its movements, and that the scientific solution of the problem of volition consists solely in discovering those forces and the laws according to which they act. He adduces evidence in favour of attributing to positive or negative heliotropism the reactions of aphides, bees, ants, &c., to light. He combats the experimental work of Jennings and others who claim to have established the inadequacy of mechanical processes to account for the behaviour of even the lowest organisms.

MR. G. L. GOMME contributes to the *Sociological Review* for October an important paper treating of sociology as the basis of inquiry into primitive culture. He lays down as the fundamental proposition of anthropological research "that inquiry into the culture and condition of primitive man as he is represented by modern savages, in the remains of decayed civilisations, or in the ancient records of the beginnings of modern civilisations, can only be conducted by considering each item of culture which is the subject of inquiry in association with all the other items of culture in the same social group." The original social unit consists of the tribal rulers and the tribal village, representing the one a conquering, the other a conquered, race. Slavery in Indo-European society means, not personal servitude, but the status of a class springing from the conquered people. Indo-European tribalism is not only a polity, but a religion, and it was indestructible. The tribe is founded, not alone on blood kinship, but also on common worship. He perhaps goes too far in extending Robertson Smith's theory of sacramental kinship with the deity to non-Semitic communities; but, with this reservation, his study of early tribal origins is interesting and suggestive.

PEOPLE who are seriously interested in aërial navigation will regret that the weekly *Ila*, issued in connection with the Frankfurt Exhibition, terminated on October 16. The seventeen issues contain many important and well-written articles dealing with various aspects of aërotechnics. Among the subjects treated are aërial motors, by E. Rumpler; materials and machinery, by August Bauschlicher; measurements of air resistance at Lindenberg, by Dr. F. Bendemann; aërial electricity, by O. Voigt; wind statistics, by W. Peppler; bird flight, by F. W. Lanchester (translated by H. Hochschild); the special steel industry, by W. Eilender; meteorological statistics for airships, by W. Peppler; balloon photography, by Captain Scheimpflug (abstract); aërodynamical researches, by Prof. Ahlborn (some of whose photographs of stream lines closely resemble those recently obtained by W. E. Williams in this country); besides unsigned articles on vehicles for transport of hydrogen, lamps for hangars, the Parseval balloon, and technical notes. The seventeen numbers of *Ila* will preserve their place in the literature of aërotechnics long after the great majority of journals of mushroom growth have passed into oblivion.

SEVENTY out of the hundred and eighty pages of the August number of the Proceedings of the American Philosophical Society of Philadelphia are devoted to papers dealing with seismological subjects, some of which have been mentioned already (June 10, vol. lxxx., p. 444). The first, on the causes and effects of earthquakes, by Mr. E. O. Hovey, treats the subject in a popular manner, and contains descriptions of the Charleston (1886), the California (1906), the Kingston (1907), and the Messina (1908) earthquakes. The second, by Mr. W. H. Hobbs, deals with the evolution and outlook of seismic geology, and advocates two lines of advance:—first, to make practical use of the knowledge already gained, and second, to refine our instruments until we are capable of forecasting the time, place, and severity of the next earthquake. He points out the importance, as a means of forecasting, of the principle of immunity from shock for a long period of a region which has just experienced one, and suggests that more refined instruments may show that slight tremors precede all shocks. A third paper, by Mr. H. F. Reid, urges the United States Government to found a seismological bureau for the study of earthquakes, particularly in the United States.

Marine steam turbines show generally a lower efficiency as compared with corresponding land turbines on account of the compromise which has to be made regarding speeds of revolution. This is owing to the fact that the propeller has best efficiency at comparatively low speeds, while the turbine gives best results at high speeds. In *Engineering* for November 5 is described one of the several methods which have been tried for securing a reduction of speed from the turbine to the propeller, thus enabling both to be worked at their best speeds. The arrangement is due to Dr. Föttinger, of the Vulcan Company, of Stettin, and consists of a differential water-turbine transmitter in which the primary water-wheel is driven by the steam-turbine shaft, and transmits water with a certain velocity through guide blades or directly to a secondary wheel or wheels mounted on the secondary or propeller shaft in the same axial plane. Transmission ratios of from 3/1 up to 12/1 can be provided, and reversal can be obtained by means of a reversing water-turbine transmitter of somewhat similar design on the same shafts. With an experimental installation at the works in which the primary shaft runs at 1600 revolutions per minute and the propeller shaft at about 270 ahead, reversal to 250 revolutions astern can be obtained in nineteen seconds. The efficiency of power transmission rises rapidly to 78 per cent. at 600 revolutions per minute of the primary shaft, and remains constant at 83 per cent. at 1250 revolutions. This installation has a transmission ratio of 4·5 to 1. The Vulcan Company have built a special steamer for trials with this arrangement, and it will also be probably tried on warships. The arrangement seems to be valuable and likely to come into extensive use.

We have received from Mr. Bernard Quaritch, 11 Grafton Street, New Bond Street, London, a copy of his current issue of rare and valuable books now offered for sale. The list includes many interesting volumes concerned with America and Australasia.

Messrs. Longmans, Green and Co. will publish in a few days "Beasts and Men: being Carl Hagenbeck's Experiences for Half a Century among Wild Animals," an abridged translation by H. S. R. Elliot and A. G. Thacker, with an introduction by Dr. P. Chalmers Mitchell. Carl Hagenbeck is the founder of the famous Zoological Park at Stellingen, near Hamburg.

Reference has been made before in these columns to the convenience of the circulating library of Mr. H. K. Lewis, Gower Street, London, to students of science and others. The most recent list of new books and new editions added to the library during July, August, and September of the present year shows that great pains are being taken to keep the library complete and up to date.

The Cambridge University Press announces as in the press "Mathematical and Physical Papers," by the late Lord Kelvin, vol. iv., hydrodynamics, containing vortex motion, tides, and waves on water, collected and arranged by Sir J. Larmor, secretary of the Royal Society. The same publishers have in preparation "Lord Kelvin: Scientific Remains," including excerpts from early diaries and from his scientific correspondence, together with a reprint of the historical account of his scientific career prepared for the obituary notices of the Royal Society. This work is also by Sir J. Larmor.

OUR ASTRONOMICAL COLUMN.

A Brilliant Meteor.—A magnificent meteor was observed, at 11h. 59m., at the Solar Physics Observatory, South Kensington, on November 15. The observed path was from about 114½°, +27½° to 87½°, +6°, *i.e.* from immediately below Pollux to immediately below Betelgeuse, the path being nearly horizontal.

The meteor was very bright, exhibited striking red and greenish tints, and travelled with a medium velocity. It did not explode, but the large bright head simply faded away, leaving a definite trail, which endured for some two or three seconds.

Elements of Halley's Comet.—The following five elements of Halley's comet are those calculated by Mr. P. H. Cowell, F.R.S., and Mr. A. C. D. Crommelin, from the perturbations since 1835:—

	°	′	″
Longitude of ascending node	57	16	12
Node to perihelion	111	42	16
Inclination of orbit	162	12	42
Semi-major axis of ellipse	17·94527		
Eccentricity...	0·967281		

The above elements have not yet been re-determined from recent observations.

The predicted date of perihelion passage was 1910 April 16·6.

The observed positions in 1909 September and October can be satisfied, both in right ascension and declination, by altering the date of perihelion passage to 1910 April 19·7 and retaining the predicted values of the other elements.

Recent Observations of Mars.—In No. 4367 of the *Astronomische Nachrichten* M. Jonckheere gives 24·325″ as the mean diameter of Mars from several observations near opposition; at unit distance this would be 9·533″, which means that if the diameter of the earth be taken as 1·0, that of Mars is 0·540. The observed flattening of the polar diameter was 1:270·8. A list of nine probably new canals is given, names being proposed for six of them which are certainly novel.

In No. 4368 of the same journal M. Jonckheere gives two drawings, made on September 30, 11h. 30m. (long. 210°), and October 5, 10h. 10m. (long. 145°), respectively. On the former date a number of "lands" and thirty-four canals, four probably new, were seen, and on the latter date forty-nine canals, six probably new, and seven "lands" were recorded. Among the latter were the two new ones, Stella, near the polar cap, and Thaumas, in the Aonius Sinus.

No. 4367 also contains a note, by M. Jarry Desloges, recording the observation and disappearance of a terminator projection in the region of Daedalia, variations in the Lacus Solis, the Auroræ Sinus and Deucalionis Regio, and the discovery of two new canals.

A paper by M. Desloges also appears in No. 17 of the *Comptes rendus* (October 26), in which the author divides the canaliform markings into three types:—(1) broad greyish bands; (2) lines of medium breadth, very dark, and with definite edges; (3) fine lines near the limit of visibility. He suspects that some features of the first type have, at times, been resolved into finer details, whilst among those of the second type changes have undoubtedly taken place. The finer markings, type 3, appear to have become greatly augmented in number. His collaborators, MM. Fournier, saw Araxes, type 1, single, then double, and finally triple, but M. Desloges himself has never been certain of seeing a canal doubled. Two charts given in the paper